

Interactivos? 12 Ljubljana 05-15.IX.2012

Obsolete Technologies of the Future

Ljudmila Digital Media Lab
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Article 19.

Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas **through any media** and regardless of frontiers.

ORIGINAL CONCEPT

As radio markets increasingly become corporate owned monocultures and governments slash funding to public radio, smaller communities and subcultures become underserved or cut out completely from this vital form of communication. Our project, AIR, seeks to address this problem by going smaller instead of bigger, focusing on creating a direct relationship between radio listener and radio station, turning the top down one way direction of traditional radio into a circle. AIR, is an autonomous, neighborhood oriented, interactive, micro-radio station. The station consists of a low power radio transmitter and wifi enabled computer that is scripted to automatically download, queue, and then play, all audio files emailed to it. Files are played as they are downloaded by the station computer, and if multiple files are sent at once, they are queued in the order they are received. All files are added to a running playlist that is played and looped through continuously when no songs are being received. The content of this micro-radio station is based solely on the files people email to it. The queue system is set up to ensure a direct and immediate way to interact with A.I.R. With this project we wish to make radio a new space for neighborhood level interaction, expression, and experimentation.



Autonomous
Interactive
Radio

Community radio for Ljudmila

REID BINGHAM

In the United States, radio is dying. Republicans are killing public radio. Budget cuts are killing college radio. The Internet and iThings are killing radio radio. Its a sad situation to see a medium die and the Radio Industry isnt helping. Aside from the handful of stations keeping freeform, alternative, and independent broadcasting alive on the East and West coast, the majority of the country is experiencing a slow death of a medium.

Its within this context that we were interested in creating ways to directly interact with a public broadcast medium. Most people have never had a chance to actually decide what is played on the air. What if we gave them a chance? Could we hybridize radio with the medium that is bringing about its obsolescence? Is it possible to combine the direct participation of the internet with the one directional flow of the radio?

Like punks squatting an abandoned building, we wanted to squat an abandoned broadcast medium and turn it into a community space. We'd call it Autonomous Interactive Radio, taking a note from Bey's Temporary Autonomous Zone, and make a system that would allow a minority group or subculture that was abandoned by mainstream radio to take back that space and decide what is played on the air. It would be radio created and self regulated by the community in which it serves.

But radio is not fully abandoned yet, especially not in Ljubljana. After meeting with Radio Cona and visiting with Radio Študent, its obvious that radio is alive and well here. The context in which people relate to radio is completely different than anything we are used to in the United States. People defend the radio here. They fought for it, and continue to fight. Its truly inspiring. But where does that leave our invisible punk squat utopian community radio space?

After broadcasting on small scale at a Bikofe, and large scale on Radio Študent, flaws became apparent in the original radio utopian dream. Free radio does not equal good radio. We need create web based interfaces for the community to self regulate spammers and manage content. Bigger does not mean better. The ideal scale seems to be smaller - a physical community of people who interact regularly, like at a hackerspace, job, or cafe, not a larger group of anonymous people.



SEAN MCINTYRE

First time dabbler, long time listener.

I was in Nuremberg when I confessed to Reid that I was worried about our project idea. "This makes me nervous, it's all a big experiment, we're going to have a lot of failures," I told him. He listened to my complaints and calmed me down, as any collaborator should. He told me, "It's supposed to be an experiment, that's why we're here, get used to it, it's not as bad as you think."

A week later, we arrived in Ljubljana to begin our 10 days to build AIR. Our goal was to change the world with an FM transmitter and a Raspberry Pi, or so it felt. When we told people about our project, the reactions were all positive: "Cool!", "I like it!", "How can I participate?", all common reactions, but I was skeptical.

I'll make the software in a day or two, I thought, then the rest of the time in Ljubljana we'll be walking around the city performing pirate broadcasts. We'll quickly build a base of listeners who will cooperate with one another and the hardest part of the project will be find someone to make our Ljubljana AIR permanent.

Three days passed and the software hadn't gone anywhere, we had just finished assembling our antenna and FM transmitter, and the most pressing issue was to make audio clips for Radio Študent (I didn't sign up for this!). Three more days passed and we had finally set up a station for everybody working alongside us at the Interactivos workshop, for fun, to make sure the software was working. We put up the radio in the kitchen and washroom just so someone would hear it.

The ninth day was our first AIR pirate broadcast at Bi-ko-fe in the centre of Ljubljana, a cafe better than Brooklyn. It took as much time to set up as it took to broadcast, but we did

it. We didn't get the reaction we demanded of ourselves: we didn't change the world, just like how we didn't change the world when we broadcasted the program on real live FM airwaves of Radio Študent on the eighth day.

Shortly after our first and only pirate broadcast in Ljubljana, we sat down for a late lunch and chatted about what had happened. We didn't accomplish our goals, but maybe our goals were wrong, Tomislav thought aloud.

AH!

It made complete sense. Of course we couldn't change the world (in such a short time?), but we fully engaged 30 people at Ljudmila. I recalled our workshop mates talking about AIR when they thought I wasn't listening, the gigabytes of music we received for our test radio, the joy of using the toilet and hearing the radio station, receiving emails from Madrid about it. I recalled people coming up to us asking me how to bring this concept home with them and to take it to new places.

I recalled my education, the Listserve, and Clay Shirky's class on designing conversational space (which I haven't taken). I realized what we did create was something difficult to accomplish a short period of time, that I have a platform to experiment again with informally, and the joys of learning by experience.

Please take this project and try it at your next workshop, hackathon, or at your office of friends. That's the perfect place to use AIR, when you're stuck together with people you can talk with and have time to talk about what you're listening to. Try setting it up yourself, but email me if you need computer help, boxysean@gmail.com. It has been a lot of fun trying to get all the inputs and outputs of broadcast systems tied up together!

How do we break out of stagnations or old habits of everyday life both individually and socio-ecologically? It takes micro modifications of what already routinely happens as part of the pre-existing socio-ecological fabric. These pre-existing conditions of the so called fabric must be subtly torn in order to be able to work constructively inside of them, re-weaving broken threads which are uniquely ours. In these terms, the Ljudmila Media Lab provides the institutional front under which a physical and theoretical community space opens for a modification of habitual systems and conventions through experimental collaborative construction not only of machines and systems, but of situations. What makes this possible at Ljudmila is its more or less horizontal model of interaction between established members, new-comers, and international guests in the Interactivos program. Being open to the general public both spatially and intellectually (for example, via its involvement creative commons licensing), anyone can contribute ideas, creative labour, and assist in organizing happenings. Only one of the many on-going experiments, Autonomous Interactive Radio is an attempt to stray from pre-existing radio forms that have been in use for decades. As the program Interactivos: Obsolete Technologies of the Future suggests, we are not here to develop a "new" technology that has previously not existed, but to energize alternative forms of the same technology that have not yet been utilized.

Moreover, it is not enough to call Interactivos Ljubljana a workshop where older technologies are re-built and purposed toward new uses or to call Ljudmila merely a space for collaborative construction. Using these sole categorizations excludes a life-giving aspect of the program relegating it to sole Labour. Of course, the program would be nothing without Labour but mouths full of noise, but the immense amount of

material makes it apparent that is not the case. Each project is energized by a set of blooming friendships and strengthening pre-existing solidarities based on the creative exchange of ideas, desires, and histories both in the workshop and outside at auxiliary social events. In this sense, a dense but free-floating aggregate of [re-]inventors forms through sharing meals, cigarettes, tools, stories, ephemera, labour, jokes, hand-made gifts, intellect, coffee, and whatever else.

The relative success of a sub-sect of the Autonomous Interactive Radio project, titled Interactivos Radio, does not absolutely rely on its content or technical complexity, but rather to these engaging friendships which have grown in the Ljudmila milieu. Interactivos Radio is small-scale FM radio broadcast within the Ljudmila laboratory. Technically, it involves the basic AIR system where anyone can email an audio file to an email address, at which point the audio is broadcast both through an Internet stream and an FM transmitter. Interactivos Radio contributes to the general solidarity of the aggregate as it serves as an auxiliary medium of exchange constantly streaming in the background. Someone submits a self-made recording, an enjoyable tune, some controversial music or someone technically exploits the broadcasting system from which there stem a multitude of conversations that contribute to the connections formed through working together. It works in a feedback loop.

It must be understood that Interactivos Radio worked in a relatively small and open-minded space. Even though there were many unknowns-at least for myself-before the Interactivos program started, I understood through Ljudmila's promotional material that it operated in a radical and intense environment with a more or less horizontal organization of work between skilled people from a variety of disciplines serving as an incubator for nascent manifestations of a number of projects.

What happens when the systems constructed within this

independent zone with its own community such as Autonomous Interactive Radio are taken out into larger, more unfamiliar contexts? Of course, the aggregate of active people which comprise the local community of Ljudmila are woven into other associations and affiliations, each of which maintain their own programs, conventions, habitual events and happenings. These secondary affiliations through the Ljudmila node are what put the Autonomous Interactive Radio group in conversation with the radical FM station Radio Študent 89.3FM. Through Radio Študent, Ljudmila was able to air informative segments about the Interactivos program as well as interviews with the various projects. Also, due to the nature of the Autonomous Interactive Radio project, Radio Študent agreed to air another one hour segment that utilized the Autonomous Interactive Radio system. There are at least two important differences between the release of Autonomous Interactive Radio within Ljudmila and onto Radio Študent. For one, the community formed as part of Interactivos is dispersed into the general public of listeners once the system is used in a larger scale or in public. Anyone is permitted to send audio to the system which allows any number of things to be broadcast. In this way, the broadcasted material is susceptible to losing any context whatsoever by being so broad., turning into something purely consumerist or mainstream. This brings us to the second important difference: the lack of explicit community greatly reduces the radicality of the project. No longer is a very focused and diverse known group taking part, but rather an invisible group of listeners whose shape may come loosely into view after repeated broadcasts. To add to this, we are not dealing with apolitical alternative radio station as there is in the United States, but rather a forty-three year old institution whose foundation is rooted in political struggle for those outside the hegemonic discourse. It is an immense challenge to comprehend a forty-three year history of the radio station and

the decades of political people's histories which lead up to its founding within the ten day span of Interactivos.

The second hour long Radio Študent broadcast inserted Autonomous Interactive Radio, a platform designed for small-scale broadcasting, into the top of a pyramidal structure which brought an array of issues mentioned above. The planned public intervention was meant to operate at the bottom of this pyramid, but ended up being susceptible to similar problems that the Radio Študent broadcasts encountered: a release of the system into the general public risked that it become less poignant and more mainstream.

The ten day period in which the program took place was too short to develop a radically alternative radio platform which would take into consideration both small and large scale broadcasts. With large stations, it would take considerable time and institutional effort to develop a comprehensive plan to open large-scale FM broadcasts to the hands of the general public for a more direct engagement. Even if this is possible, it may not be desirable as the general public may hold an agenda which is too conservative to build a sustainable, diverse, and open-minded public station which required little to no moderation. Small scale stations encountered similar hurdles except for when there was an explicit community of active people directly involved with it.

In all of the circumstances, the Autonomous Interactive Radio group encouraged the use of non-copyrighted works and works licensed under creative commons, created by the participants themselves, or at least by people they knew. As an alternative to self-made or friend-made audio, we publicized the existence of the Free Music Archive, a US based repository of copyright free music. Practically, both copyrighted, non-copyrighted, and creative commons works were broadcast.

The future of Autonomous Interactive Radio lies wherever there are living intimate communities like the

temporary one at Interactivos Ljudmila Ljubljana. One community to which this platform may be exported is Roanoke, Virginia in the United States where the very beginnings of a rigorous aggregate is beginning to form. The environment is much different as there is no established alternative radio such as Radio Študent and the regulatory bodies which exist operate in a much different way than those in Slovenia. Perhaps if several of these Autonomous Interactive Radio networks can be setup within small radical international communities, it could create a decentralized network of radio that could by-pass pre-existing monolithic institutions opening a space for a re-configuration of the radio form and information sharing.



Let our voice be heard

Adventures in free

&

pirate radio

KRUNO JOŠT



(Film by Krsto Papić)

The year is 1971. Krsto Papić, a documentary and filmmaker born in Montenegro, at that time one of 6 republics of SFRJ, adventures to small village in Croatia's north west Zagorje, as saying goes "behind gods legs" (so far even god doesn't see it). It is a village that has all the standard qualities of forgotten countryside. There is local wine production, chickens and pigs, cows and potatoes. No import, no export, only survival. Nothing to do. The cultural revolution after second world war left only a local culture house.

But, one thing that is not different then and now is the spark in individuals and groups that are creative and imaginary enough to think of a better tomorrow. Krsto finds them gathered around small pirate radio station, built ingeniously by a local freak and radio enthusiast, a hacker of that time. But he is not only an electrician and technician, he is an artist. He is collaborator, inventor, radio drama director and writer, a political activist criticizing his society.

Radio amateurs, as they were called, opened not one radio station, but several: Radio Kutnjak, Radio Cerje, Radio Kučan, Radio Donje Ladanje. The program was named "Each of us from our own hill" and was broadcast regularly. Radio enthusiasts created their own radio dramas, produced news, hosted live singers and poets. There was no technology of

today, so no playlist - everything was done live. The village brass orchestra was waiting in the yard of radio Kutnjak in the morning, waiting for DJ's signal by hand to start playing. He would put his only microphone on the window to capture brass orchestra, but mic also captured rooster and other village sounds.

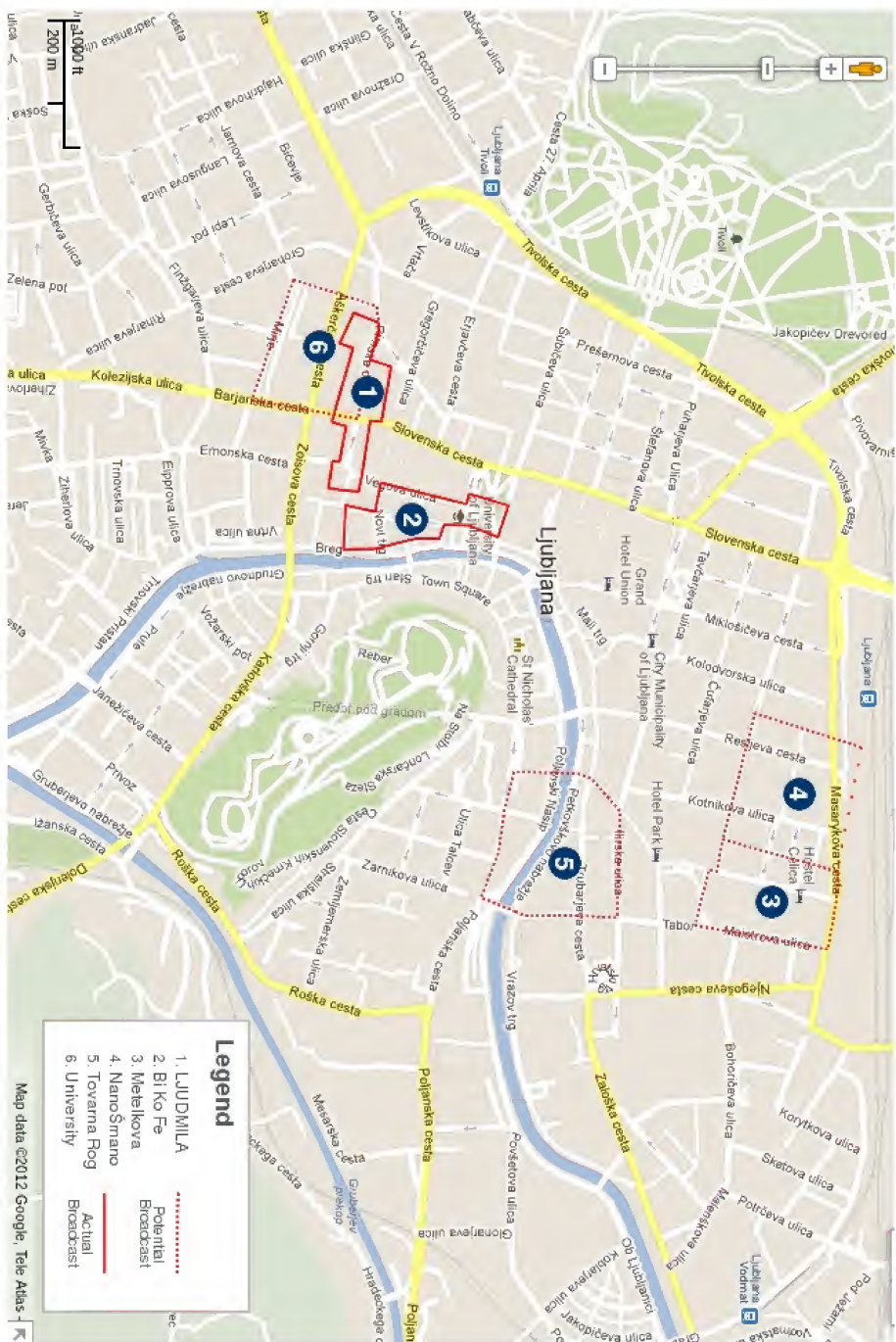
Krsto Papić (also the director of the interesting movie *The Secret of Nikola Tesla*) depicts something that is important since the beginning of the existence of the radio. It is an easy technology, acceptable in the public sphere, open to experiments and has tremendous power in mediating energy of creativity. As a painter would put a brush on the canvas, a radio artist puts his/her voice or other sound tool to the radio wave, emitting it (hopefully) to others. Most interesting is that this artist usually doesn't work alone in his small studio. No, this artist is a collaborator, person who works with group energy, a true human.

As history shows, governments and markets don't like freedom. As the first pirate radios were closed, so were offshore frequencies, boat pirate radios in international waters, so were free radios, clandestine radio stations during the summer of love, so did most of radio and internet free radio stations later in history, and so did the radio broadcasting "Each of us from our own hill". Temporal activity of radio is another plus, not a minus. Free and pirate radio producers enjoy erecting their antennas wherever and whenever, moving them as they move, creating on the spot, with ad-hoc materials, recording markets and real-people interviews, without censorship or make up or spin doctoring, they have no sponsors to obey, no political agenda of left and right wing, no commercial space they have to fill in.

[<http://www.youtube.com/watch?v=YOL8ncpxFRw>]

AIR AND LOCAL COMMUNITIES

The initial start of the Autonomous Interactive Radio station was accompanied by meetings with the local alternative radio initiatives: radioCona gave us great insight into the legal requirements of APEK and the role of SAZAS. Interactivos Radio AIR on Radio Študent - direct intervention into an existing radio station was welcome but strange experience, because we are builders and not people who would create content. By the construction of transmitter technologies and development of software packages, we opened a physical space, a medium that needed public participation to be filled. Since we are primarily builders, we would like others to use the space that we had opened, but that is of course a long term community building process that needs more time. We experimented and tested the system with kind help of Vuk Ćosić and his family for the realisation of public intervention and public broadcasting at the crossroad of Gosposka and Židovska. AIR is now a portable radio station of short range that we would like others to use. Every medium promotes a specific content that has political, social and aesthetic characteristics, determined by a conscious decision of the content makers. We are not going to be the ones who decide about the political and aesthetic identity of this radio, this is for the users to determine in collaboration when creating a local radio community that would serve their specific needs especially in the places where the radio waves are over popularised by commercial stations or in rural places where the radio space is very monotonous. We are aware that simply creating the tool is only the first step in using the vast potentials of the FM spectrum.



TECHNOLOGIES USED

The radio station is a mix of analog electronics and computers with internet connectivity running free and open-source software. We used the FM25B Transmitter kit from Ramsey Electronics with the TM100 Antenna kit. If you wanted to make this system on your own you can use these models or any other 25mW or greater FM transmitter. An Internet connected (wifi or ethernet) Raspberry Pi was used as the media server running custom software that was programmed in Python. We used the Music Player Daemon (mpd) and Icecast open source packages to play and stream music on the Raspberry Pi.

STAGES OF BUILDING AIR

The Radio Transmitter: We used the FM25B radio transmitter kit from Ramsey Electronics (USA). It is well made with great instructions, and if you need it, technical support, but feel free to use any type of transmitter you want. If you are a first time builder, Ramsey is pretty great: 25mW or greater, though 1watt seems to be best middle ground between being too strong and being strong enough. For the DIY method you can build your own micro FM transmitter by following Tetsuo Kogawa's design.

Antennas are great for increasing broadcast distance. Some kits come with their own small one while others don't, but in general, you never want to turn on a transmitter without one. The TM100 from Ramsey Electronics is a simple and effective kit that we built, but there are many many DIY options. Beware though, there is a lot of advanced calculus and physics involved in antenna design that you may want to avoid by getting a kit or working from someone else's design. Antennas should be installed as high as possible, preferably on

a roof, to get maximum broadcast distance. If you are doing a temporary installation or event with your antenna you may have to get creative so be sure to bring plenty of duct tape, zip ties, and clamps. Kruno Jošt once raised an antenna using a bunch of helium balloons, so do not be afraid to improvise!

The Media Server: The second step in this process is setting up the computer that will act as the media server for the system. Any old computer will do, as long as you can install Debian or Ubuntu Linux on it. For our system we used a Raspberry Pi, a more recent micro-computer that only costs \$35 USD! The audio output of the computer will go into the audio input of the FM Transmitter.

Setting up the Server: Download the AIR software at:
[<http://github.com/boxysean/airradio>]

We encourage the use of free internet services, which we use ourselves, to help run the radio station manager software. For email, you can register a GMail account to be the email address where users send their songs to because of the 25 MB file size limit and 10 GB account storage size. For public notifications, we have built in Twitter support to tweet information about your radio station, so people can read which audio files are playing at any given time.

The AIR software github.com page outlines in detail the steps to install software and what extra packages you need. Basically you'll need to download the mpd, mpc, and pip packages with aptitude. You'll also need python libraries python-mpd and pyyaml, which are easy to install using pip. The software uses a lot of open source libraries in order to overall reduce complexity and increase reliability of our system.

It's fun and useful to stream AIR to an Internet radio stream. We used Icecast to do this, but the Raspberry Pi is a tad bit slow to encode the stream to send to an uplink. Instead,

consider running the AIR software on a remote server and using the Raspberry Pi to listen to the Internet radio stream to output to speakers or your FM transmitter.

FURTHER SOFTWARE DEVELOPMENT

The AIR code is open source and released under AGPLv3. Our project can be improved in a number of ways, but these are the key areas we'd like to improve upon.

Publish playlist

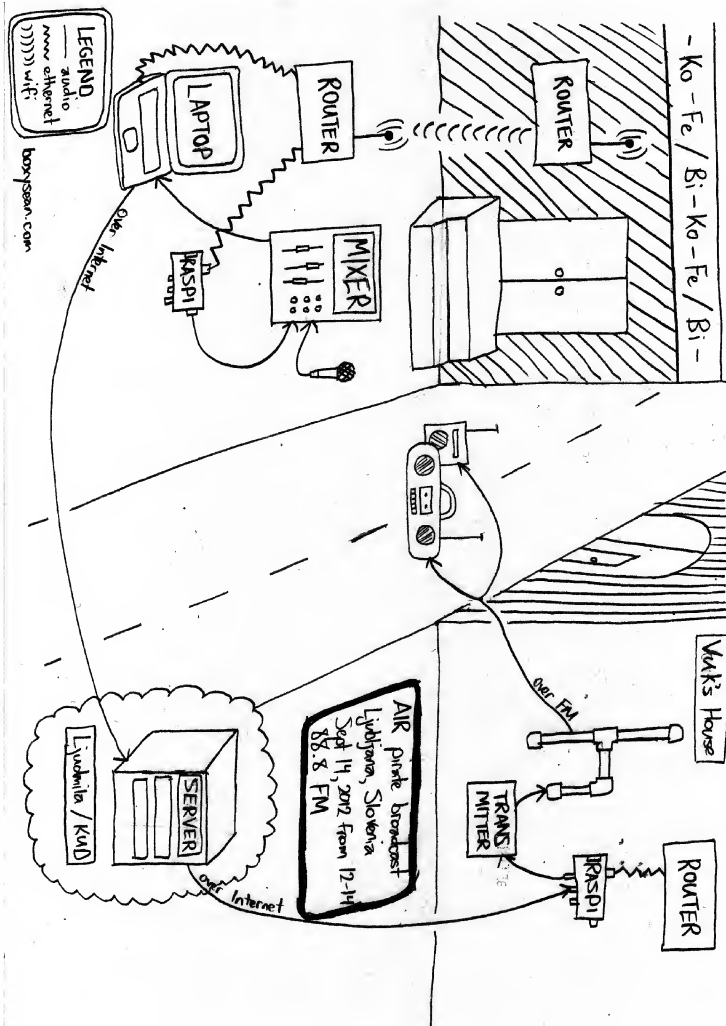
The most common request from people is: "can I see the playlist?" It doesn't make sense to not add this feature, given that people are interacting with it. Another option would be to include "time until song" with email responses so that there is some feedback mechanism for the users. It is an experiment to know whether or not this is enough feedback.

Publish submission frequency counts per email

This community feedback feature has the potential of adding self-regulation to the radio. For example, if everybody using the radio knew each other and knew that harry@email.com was sending the bulk of songs, then maybe -- just maybe -- people would find out who harry@email.com is and confront him on his curiously high number of song submissions. Or maybe it will make the community competitive, to flood the radio with more songs. Who knows? :)

Dynamic playlist manager

Another big complaint the system receives is that it queues new songs to the end of the playlist rather than something smarter. For example, if the playlist has looped from the end back to the beginning, mpd will play all songs that have been heard before playing new songs at the end of the queue.

[illegible]

ARTISTS - ORGANIZATIONS - RADIO - PROJECTS
that inspire us

Ligna

[<http://ligna.blogspot.com/>]

LJUDMILA Laboratory

[<http://ljudmila.org>]

Medialab-Prado

[<http://medialab-prado.es/>]

Metelkova

[<http://metelkovamesto.org/>]

Mobile Radio

[<http://mobile-radio.net/>]

PiRadio

[<http://kulturserver-berlin.de/home/piradio/prolog.htm>]

Project Gutenberg

[<http://www.gutenberg.org/>]

PostNeoAbsurdist Anti-Collective

[<http://postneoabsurdism.blogspot.com>]

Radio Kričać

[http://sl.wikipedia.org/wiki/Radio_Kričać]

RADIO ŠTUDENT - Ljubljana

[<http://www.radiostudent.si/>]

radioCona

[<http://cona.si>]

Star City Shadow School

[<http://liberte-shadow-school.blogspot.com/>]

Temporary Autonomous Zone

[http://hermetic.com/bey/taz_cont.html]

Traveling Free Radio

[<http://mmkamp.gentlejunk.net/tag/free-traveling-radio/>]

WFMU

[<http://wfmu.org/>]

BUILD YOUR OWN TRANSMITTER

Free Radio Berkley

[<http://freeradio.org>]

Ramsey Electronics

[<http://ramseyelectronics.com>]

Tetsuo Kogawa

[<http://anarchy.translocal.jp/>]

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[<http://creativecommons.org>]

Creative Commons Slovenija

[<http://creativecommons.si>]

Free Music Archive

[<http://freemusicarchive.org>]



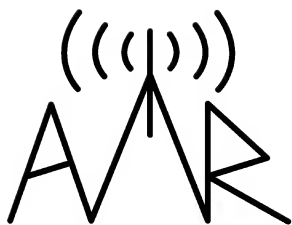
The AUTONOMOUS INTERACTIVE RADIO GROUP
[<http://heartheair.tumblr.com>]

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Autonomous Interactive Radio



LJUDMILA

[PRO-][ANTI-]

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